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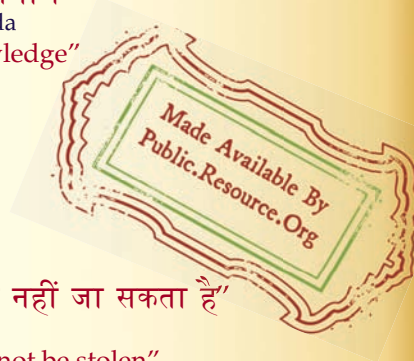
IS 10584-2 (1983): Glass marking pencils, Part 2: With spiral paper-form casing [CHD 14: Printing, Inks, Stationary and Allied Products]



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“Knowledge is such a treasure which cannot be stolen”



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*Indian Standard*  
SPECIFICATION FOR  
GLASS-MARKING PENCILS  
PART 2 WITH SPIRAL PAPER-FORM CASING

UDC 677.565 : 666.1-777



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**INDIAN STANDARDS INSTITUTION**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

# Indian Standard

## SPECIFICATION FOR GLASS-MARKING PENCILS

### PART 2 WITH SPIRAL PAPER-FORM CASING

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# *Indian Standard*

## SPECIFICATION FOR GLASS-MARKING PENCILS

### PART 2 WITH SPIRAL PAPER-FORM CASING

#### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 12 May 1983, after the draft finalized by Pencils Sectional Committee had been approved by the Consumer Products and Medical Instruments Division Council.

**0.2** This standard contains clauses which call for agreement between the purchaser and the supplier and which permit the purchaser to use his option for selection to suit his requirements. The relevant clauses are **2.2**, **7.1** and **8.2**.

**0.3** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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#### 1. SCOPE

**1.1** This standard covers the requirements and methods of tests for pencils with spiral paper-form casing for marking on glossy-surface materials.

#### 2. TYPE AND COLOUR

**2.1 Types** — The pencil shall be of two types depending upon diameter of slip ( *see also 5.3* ).

Type I    4.6 to 5.0 mm

Type II    3.6 to 4.0 mm

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\*Rules for rounding off numerical values ( *revised* ).

**2.2 Colours** — As agreed to between the purchaser and the supplier the pencil and slip shall be any of the following colours:

|       |        |        |
|-------|--------|--------|
| Black | Green  | Red    |
| Blue  | Orange | White  |
| Brown | Purple | Yellow |

### **3. MATERIALS**

**3.1 Slip** — The slip shall be a mixture of wax, extender and pigments compounded to meet the requirements of this specification.

**3.2 Casing** — Slips shall be spirally wrapped with at least seventeen layers of paper. The wrapping shall be scored suitably at intervals of 5 mm to permit easy removal as slip is consumed. Each interval shall be provided with an indentation or other suitable method for easily starting the process of removing the paper.

### **4. WORKMANSHIP AND FINISH**

**4.1** The slip shall be in one piece of uniform grading and uniform colour. It shall mark easily on smooth surfaces without crumbling or slipping.

**4.2** The pencil shall be free from irregularities, twisting, or other defects and shall be properly finished. The casing shall be uniform thickness and co-axial with the slip. The ends shall be at right angles to the length of the pencil. The outer surface of the pencil shall reasonably represent the colour of the slip. The pencil shall be finished in accordance with standard trade practice.

### **5. SHAPES AND DIMENSIONS**

**5.1 Shape** — The pencils shall be manufactured into circular in cross-section.

**5.2 Length of Pencils** — The length of pencils shall be  $180 \pm 3$  mm.

**5.3 Diameter of Slip** — The diameter of slip of pencil shall be as under:

- a) Type I 4.6 to 5.0 mm, and
- b) Type II 3.6 to 4.0 mm.

**5.4** The diameter of pencils shall be between 9.0 and 10.0 mm.

## 6. TESTS

**6.1 Dimension** — For measurement of length, effective length of the slip should be measured. For measurement of slip-diameter the slip shall be taken out of the casing. Diameter of slip may also be measured before being wrapped with papers.

**6.2 Eccentricity of Slip with the Casing** — Slip shall not show an eccentricity of more than 0.3 mm with the casing when measured by the method described in Appendix A.

**6.3 Legibility and Stability** — Six 10 mm high letters and numbers shall be inscribed on the side of a glass beaker with a sample pencil. The beaker shall be placed in an oven at a temperature of  $60 \pm 2^{\circ}\text{C}$  for a period of one hour. The beaker shall then be removed and allowed to cool down to room temperature. Marking shall be clearly legible with little or no colour change.

**6.4 Marking Characteristics** — The same pencil used in the preceding test shall be tested for writing on the following glossy surface materials:

Aluminium, callophane, PVC and HD polyethene sheet and glazed white porcelain. Straight line and zig-zag lines consisting of short straight lines forming sharp angles shall be drawn on each of the specified materials. Markings shall then be examined. Markings shall be continuous, clearly visible, distinct and sharp, free from chips and crumbs, except that a slight break in continuity of markings at any angle will be permitted.

**6.5 Water-Soluble Matter of Slip** — When tested in accordance with the procedure given under Appendix B, this shall not exceed 1.25 percent by weight.

**6.6 Breaking Strength of Slip** — The slip shall have a breaking strength of not less than 2.0 kg for Type I pencils and 1.4 kg for Type II pencils when tested in accordance with Appendix C.

## 7. SAMPLING

**7.1 Sampling and acceptance criteria** shall be as agreed to between the purchaser and the supplier. A recommended scheme for the same is given in Appendix D.

## 8. MARKING AND PACKING

**8.1** Each pencil shall be marked with:

- a) the name and trade-mark of the manufacturer,
- b) type and colour of the pencil, and
- c) other indication which may be specified by the purchaser.

**8.1.1 Pencils may also be marked with the ISI Certification Mark.**

**NOTE** — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution ( Certification Marks ) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors may be obtained from the Indian Standards Institution.

**8.2** Twelve or any number of pencils of the same colour and type as agreed to between the purchaser and the supplier shall be packed in a paper-board open-end sleeve, clear plastics tray or other suitable container bearing the name or trade-mark of the manufacturer, type and colour of the pencils, and month and year of packing of the pencils. Twelve such packets shall be packed in a cardboard or plastic box. Each such box shall be marked to indicate the type, colour, month and year of packing of the pencils and also the name or trade-mark of the manufacturer.

## **A P P E N D I X    A**

*( Clause 6.2 )*

### **ECCENTRICITY OF SLIP WITH THE CASINGS**

#### **A-1. PROCEDURE**

**A-1.1** The pencil shall be prepared so that the normal circular, unsharpened portion of the slip extends 15 mm from the casing at both the ends.

**A-1.2** Place the two exposed portions of the slip on two suitable smooth semi-circular vertical notches suitably adjusted to be in the same horizontal axis as that of the sample pencil so that the pencil may be made to rotate freely round its own axis, while exposed slip-ends rest on two notches.

**A-1.3** Choose a suitable point on the surface of the casing such that it is approximately 20 mm inside the casing from one end. Take the reading of a dial-gauge by placing its needle vertically on the point. Give the pencil a rotation of about 60° and take the second reading of the dial-gauge. Take six such readings by giving the pencil a rotation of 60° successively. The readings may now be compared to obtain the eccentricity of the slip with the casing.

**A-1.4** Reverse the ends of the pencil and take second set of readings as described in **A-1.3**.

## APPENDIX B

( *Clauses 6.5 and D-2.4* )

### WATER SOLUBLE MATTER OF SLIP

**B-1.** Weigh accurately about 5 g of the material and boil with 200 ml of water for 5 minutes. Make up the volume to 250 ml with water. Filter the solution.

**B-1.1** Reject the first 50 ml of the filtrate. Take an aliquot portion ( say  $V$  ml ) from the remaining solution and evaporate to dryness on a water-bath. Dry the residue to constant weight in an air-oven maintained at  $150 \pm 1^\circ\text{C}$ .

**B-1.2** Calculate as under:

$$\text{Water soluble matter} = \frac{250 \times C \times 100}{VW}$$

where

$C$  = constant weight in g of the residue,

$V$  = volume in ml of the solution taken for the test, and

$W$  = weight in g of the material taken for the test.

NOTE — Distilled water conforming to IS : 1070-1977\* shall be used for this test.

## APPENDIX C

( *Clause 6.6* )

### BREAKING STRENGTH OF SLIP

**C-1.** The apparatus used in the test is shown in Fig. 1.

### C-2. PROCEDURE

**C-2.1** Pencils shall be prepared so that unsharpened tip of the slip extends 5 to 6 mm from the casing.

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\*Specification for water for general laboratory use ( *second revision* ).

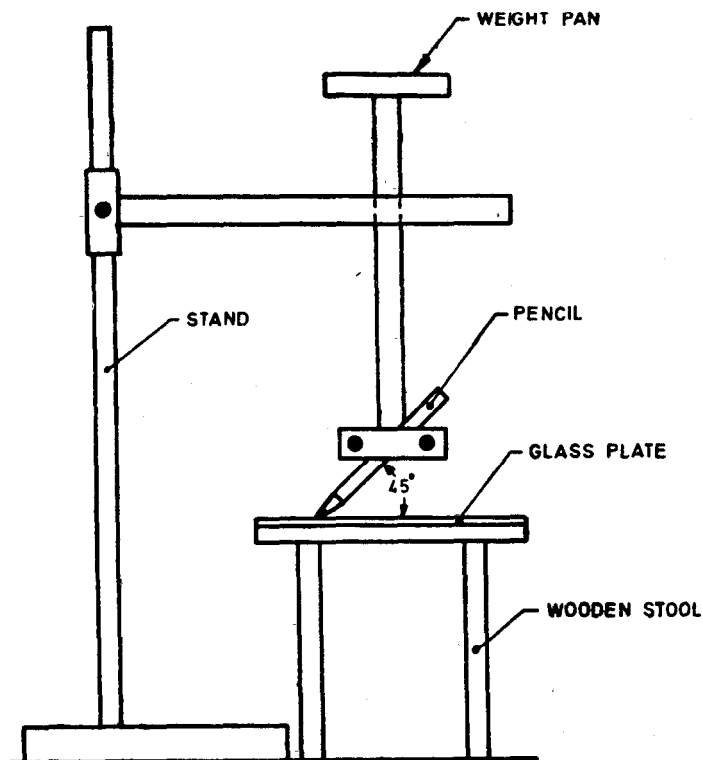


FIG. 1 APPARATUS FOR TESTING BREAKING STRENGTH OF SLIP

**C-2.2** Fix the pencil firmly at a distance of 35 to 40 mm from the exposed end of slip in a clamp such a way that the pencil remains at an angle of  $45^\circ$  to the horizontal smooth glass plate.

**C-2.3** Add weights gradually on the top of the clamp. Find the load at which the slip breaks.

**C-2.4** Repeat the test at four different places on the pencil and find the average breaking load of the slip.

**APPENDIX D**

( Clause 7.1 )

**SAMPLING AND CRITERIA FOR CONFORMITY OF GLASS MARKING PENCILS WITH SPIRAL PAPER-FORM CASING****D-1. LOT**

**D-1.1** In any consignment all the packets of pencils of same type and colour manufactured during the same period under similar conditions shall be grouped together to constitute a lot.

**D-1.2** Number of pencils to be selected from each lot shall depend upon the size of the lot and shall be in accordance with col 1 and 2 of Table 1.

**TABLE 1 SAMPLE SIZE AND CRITERIA FOR CONFORMITY**

| LOT SIZE<br>No. of<br>Packets | SAMPLE SIZE<br>No. of<br>Packets    No. of<br>Pencils |     | FOR DIMENSIONS AND<br>ECCENTRICITY OF SLIP<br>Sample<br>Size    Acceptance<br>No. |     | FOR LEGIBILITY AND<br>STABILITY, MARKING<br>CHARACTERISTICS AND<br>BREAKING STRENGTH<br>OF PENCILS<br>Sample Size |
|-------------------------------|---|-----|---|-----|---|
| (1)                           | (2)   | (3) | (4)   | (5) | (6)   |
| Up to 25                      | 2   | 7   | 5   | 0   | 2   |
| 26 to 50                      | 3   | 11  | 8   | 0   | 3   |
| 51 to 150                     | 5   | 18  | 13  | 0   | 5   |
| 151 & above                   | 7   | 28  | 20  | 1   | 8   |

**D-1.2.1** These pencils shall be selected from the lot at random and to ensure the randomness of selection, procedure given in IS : 4905-1968\* may be followed.

**D-2. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY**

**D-2.1** The pencils selected at random in accordance with col 3 of Table 1 shall be divided into two parts in accordance with col 4 and 6 of Table 1.

\* Methods for random sampling.

**D-2.2** The pencils selected in accordance with col 4 of Table 1 shall be subjected to test for dimensions ( *see 6.1* ), and eccentricity of slip with the casing ( *see 6.2* ). A lot shall be considered as conforming to these requirements if the number of defectives found in the sample is less than or equal to corresponding permissible number of defectives as given in col 5 of Table 1.

**D-2.3** The pencils selected from the sample in accordance with col 6 of Table 1 shall be examined for legibility and stability ( *see 6.3* ), marking characteristics ( *see 6.4* ). If none of the pencils in the sample fails in these tests the number of pencils shall be tested for breaking strength of slip ( *see 6.6* ). If all the pencils pass, the lot shall be considered as conforming to this test.

**D-2.4** If the lot is conforming to all the requirements as mentioned in **D-2.2** and **D-2.3**, the test for water soluble matter of slip ( *see 6.5* ) shall be carried out as given in Appendix B. If the sample passes, the lot shall be considered as conforming to this test.

**D-2.5** The lot shall be accepted if **D-2.2**, **D-2.3** and **D-2.4** are satisfied, otherwise rejected.